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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/607,156	06/26/2003	Keun-Deok Park	5000-1-321	5603

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EXAMINER	
METZMAIER, DANIEL S	
ART UNIT	**PAPER NUMBER**
1712	

DATE MAILED: 02/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/607,156	PARK ET AL.	
	Examiner	Art Unit	
	Daniel S. Metzmaier	1712	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 November 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14 and 16* is/are pending in the application.

4a) Of the above claim(s) *1-4,9 and 11-14* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *5-8,10 and 16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claims 1-17 are pending. Claims 1-4, 9, and 11-14 have been withdrawn from consideration. Claims 5-8, 10 and 15-17 have been treated on the merits.

Election/Restrictions

1. Applicant's election of Group II, claims 5-8, 10, and 15-17, in the reply filed on August 1, 2005 and July 14, 2005 is acknowledged.

2. This application contains claims 5-8, 10, and 15-17 drawn to an invention nonelected with traverse in Paper filed on August 1, 2005 and July 14, 2005. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 5-8, 10 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Korea Advanced Institute of Science and Technology, KR 2001019612 A (hereafter KR '612), as evidenced by So et al, US 6,432,151, and Derwent Abstract AN 2001-600594, collectively in view of Szekeres et al, "Adsorption of dodecyl pyridinium chloride on monodisperse porous silica", *Colloids and Surfaces A: Physicochemical and Engineering Aspects* 141 (1998) 327-336, and Wolter, US 2,601,352 and Romberger et al, US 5,230,833.

KR '612 is a family member of So et al as shown by Derwent AN 2001-600594. So et al is evidence as an English language translation of the KR '612 reference. The references are deemed to be the same or substantially the same as family member documents based on the same priority application, i.e., KR-99-36126. The citations refer to the corresponding disclosure in the So et al reference.

KR '612 and So et al (column 4, lines 36 et seq; and column 5, lines 31 et seq) disclose making silica colloid composition by mixing and agitating tetraethylorthosilicate (TEOS), ethanol, water and ammonium hydroxide. KR '612 and So et al (column 5, lines 31 et seq) teach maintaining pH of about 11 to 11.5 for electrostatic repulsion

(e.g., stability) and displacing the ethanol with aqueous phase by vacuum distillation and an ultracentrifuge. KR '612 and So et al (column 6, lines 55 et seq; and examples) disclose the addition of tetramethyl-ammonium hydroxide (TMAH) as a polishing aid.

KR '612 and So et al differ from the claims in an explicit disclosure of the concentrating step, the pH range of more than 12 or 12 to 12.8, and the concentration of 45% or more.

Szekeres et al (page 329, 2.2 Preparation of monodisperse silica) further discloses the formation of silica colloids according to the Stöber method employing tetraethylorthosilicate (synonymous with tetraethoxysilane), ethanol, and ammonia solution (implicitly an aqueous solution). Szekeres et al (page 329) discloses the silica was centrifuged and redispersed in water and said washing procedure was repeated several times. Szekeres et al (page 330, 2.3 Other Materials) discloses the water was deionized water. Any variation in less aqueous phase employed to re-disperse the silica reads on the claimed concentrating step.

To the extent the Szekeres et al reference differs in an explicit disclosure of the concentrating step, the re-dispersion in less water than the original silica colloidal solution clearly reads on the step of concentration and would have been obvious form of washing within the skill of one having ordinary skill in the art at the time of applicants' invention for the advantage of storage space and cost-effectiveness.

Szekeres et al differs from claim 7 in the use of the analogous compound tetramethyl-ammonium hydroxide rather than tetraethyl-ammonium hydroxide.

Romberger et al (column 5, lines 64, to column 6, line 10) discloses the use of hydrolysis/condensation of tetramethyl- or tetraethyl-orthosilicate to form low metal colloidal silicas. Romberger et al (column 6, lines 6-8) discloses the use of tetramethyl-ammonium hydroxide, tetraethyl-ammonium hydroxide, or mixtures thereof. Romberger et al (column 9, lines 54 et seq) further teach the tetraalkyl-ammonium hydroxides provide bactericidal activity in silica compositions.

These references are combinable since they teach hydrolysis/condensation of tetramethyl- or tetraethyl-orthosilicate to form low metal colloidal silicas stabilized by tetraalkyl-ammonium hydroxides. It would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to employ tetraethyl-ammonium hydroxide for the tetramethyl-ammonium hydroxide employed in the Szekeres et al methods as an obvious functional equivalent thereto as shown in the Romberger et al reference.

Wolter (column 7, lines 1-15) discloses the stabilization of silica sols employing among other quaternary ammonium hydroxides, the use of tetramethyl-ammonium hydroxide, tetraethyl-ammonium hydroxide, or mixtures thereof. Wolter (column 3, lines 9 et seq) further teach the tetraalkyl-ammonium hydroxides provide products having unusually high silica concentrations of 70% SiO_2 or more in the silica compositions.

These references are combinable since they teach hydrolysis/condensation of tetramethyl- or tetraethyl-orthosilicate to form low metal colloidal silicas stabilized by tetraalkyl-ammonium hydroxides.

It would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to employ the re-dispersion in less water than the original silica

colloidal solution as an obvious form of washing within the skill of one having ordinary skill in the art at the time of applicants' invention for the advantage of storage space and cost-effectiveness. Applicants have not shown the concentration of 45% or more to be critical to applicants invention.

It would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to employ tetraethyl-ammonium hydroxide for the tetramethyl-ammonium hydroxide employed in the KR '612 and So et al methods as an obvious functional equivalent thereto as shown in the Romberger et al reference.

Response to Arguments

7. Applicant's arguments filed November 30, 2005 have been fully considered but they are not persuasive.

8. Applicants (page 7) assert the Szekeres reference discloses the use of deionized water to prepare solutions but is silent regarding the water employed to wash the silica. A reasonable interpretation of the reference, wherein said reference takes steps of preparing all solutions, e.g., colloidal and including redispersing the colloidal silica to form a colloidal solution, is that the Szekeres reference employs deionized water in the wash steps.

9. Applicants assert (pages 7 and 8) none of the references teach increasing the pH to 12-12.8 now recited in independent claim 5. This has not been deemed persuasive since the KR 2001019612 A (hereafter KR '612), as evidenced by So et al, US 6,432,151, reference disclosure of "about 11.5" would read on 12 or alternatively is is sufficiently close to render the claim obvious. See MPEP 2144.05(I) wherein it sets

forth, "A *prima facie* case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. ***Titanium Metals Corp. of America v. Banner***, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985)."

Applicants provide no comparative evidence that an excess of alkalinity would provide unexpected results in the methods of making colloidal silica. It is well known that alkalinity to provide an electrical layer and provide electrostatic repulsion in colloidal silica. As the silica concentration increases, the electrostatic repulsion becomes more critical due to the increase in particle collisions, thus requiring an adequate alkalinity to maintain a sufficient electrostatic repulsion.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel S. Metzmaier whose telephone number is (571) 272-1089. The examiner can normally be reached on 9:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy P. Gulakowski can be reached on (571) 272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Daniel S. Metzmaier
Primary Examiner
Art Unit 1712

DSM